

1 ABSTRACT OF THE DISCLOSURE
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3 The invention provides a method and system for lookup of message header
4 information that has the advantages of low-power, speed, and flexibility. The invention
5 uses a sequence of pipelined on-chip memories, each having only a portion of the header
6 information intended for lookup. Each one of the on-chip memories simultaneously per-
7 forms a lookup on a portion of the header information, allowing embodiments of the in-
8 vention to operate on multiple messages worth of header information substantially si-
9 multaneously. The invention uses a novel data structure for recording destination ad-
10 dresses in the sequence of on-chip memories, having the property that moving informa-
11 tion about destination addresses, or otherwise responding to changes in network topology
12 is flexible, while at the same time maintaining relatively dense usage of the on-chip
13 memories. The novel data structure allows embodiments of the invention to find the
14 longest match destination address with no substantial additional processing over random-
15 access memory lookup.